Solar Home System

User Manual

AEH-SHS01-10W2L
Solar Home System – 2 Lamps

Schneider Electric

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Dear Customer,

Thank you for purchasing Schneider Electric's **Solar Home System - 2 Lamps**.
Now you will be able to illuminate **your home and charge your cell phone with energy from sun**. By using **solar energy for your home**, you will **help to protect our planet** from harmful effect of green house gasses.

Schneider Electric's **Solar Home System - 2 Lamps** system has been carefully designed, manufactured and factory tested to give you trouble free service. To get maximum benefits from your **Solar Home System - 2 Lamps**, please read the instructions in this manual carefully before use.

This user manual applies to the following product :

Product Reference Number	Product Description
AEH-SHS01-10W2L	Solar Home System – 2 Lamps

IMPORTANT NOTES

How to use this Manual

This manual explains how to install and operate the **Solar Home System – 2 Lamps**.

Product Safety

- This product must not be used under inflammable environment.
- The room where the solar charge controller is installed must be well ventilated.

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PRODUCT INFORMATION

Solar Home System - 2 Lamps is a solar powered autonomous home lighting system with built in universal cell phone charging feature. This helps people living in remote off grid areas or people having unreliable power from grid supply to have reliable lighting and cell phone charging from solar energy.

The system provides flexibility to customer to use any 12 Volt battery from 4.5 Ah to 50 Ah. With Schneider Electric supplied 12 V, 4.5 Ah back up unit, the system can provide 8 hours of back up for two LED Lamps with one day of charge*. The back up duration will increase with use of higher capacity battery and higher capacity solar panel.

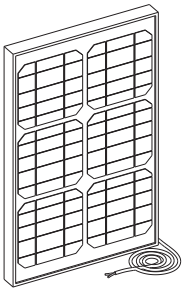
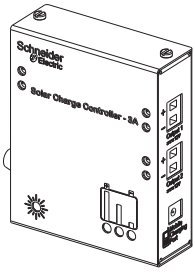
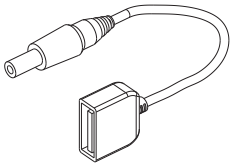
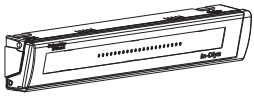
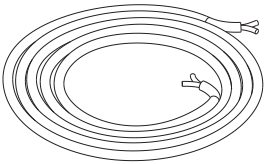
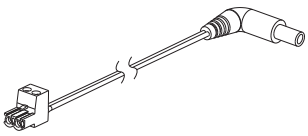
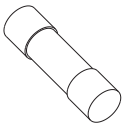
You can operate the two lamps and charge cell phone using USB cable during day time, when the battery is charged. The system can be scaled to connect load upto 36 Watt by connecting 12 V, 40 Wp solar panel and 12 V, 50 Ah battery.

Note 1 : *The Solar Home System - 2 Lamps does not come with battery.*

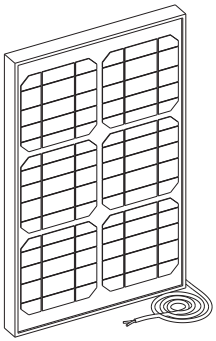
Note 2 : *The customer need to purchase Schneider Electric back up unit (Model # AEH-B06-4.5AH) to use this system.*

**under bright sunlight condition*

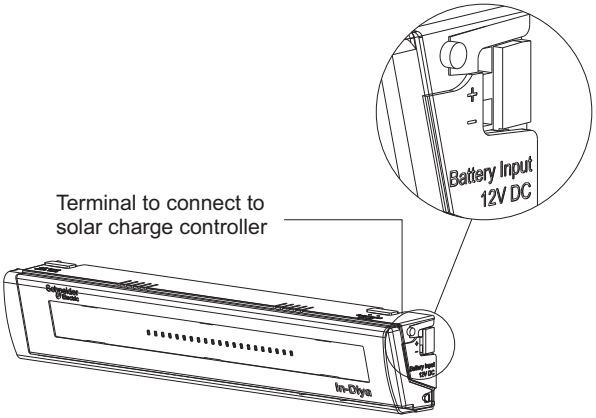
PACKAGE CONTENTS

1  Solar panel 12 V, 10 Wp with 10 m, 2 core, 18 AWG (0.75 mm^2) cable	2  Solar Charge Controller - 3A	3  USB cable to charge cell phone
4  X 2 LED Lamp - 2.5 W	5 X 2 Bed switch - 5 Amps, to operate the LED Lamps 2 Nos.	6  10 m, 2 core, 22 AWG (0.34 mm^2) cable to connect LED Lamps to the solar charge controller
7  Cable to charge In-Diya™ backup unit	8  X 2 Glass cartridge fuse - 5 Amps 2 Nos.	9 X 6 Screw - M3.5 X 19 mm 6 Nos.

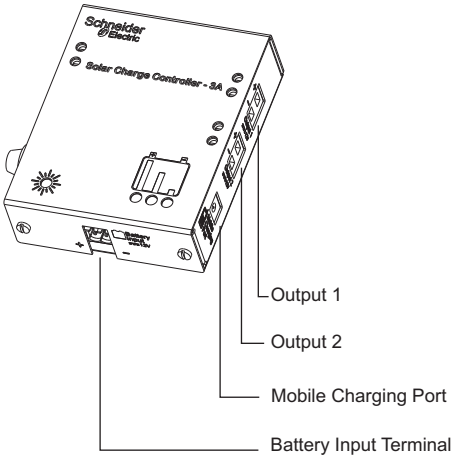
PARTS IDENTIFICATION

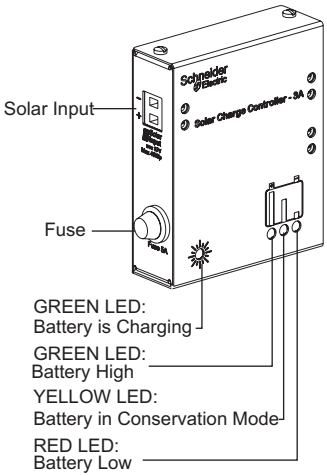


Solar Panel 12 V, 10 Wp with
10 m, 2 core, 18 AWG (0.75 mm^2)
cable

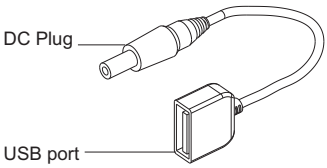


LED Lamp

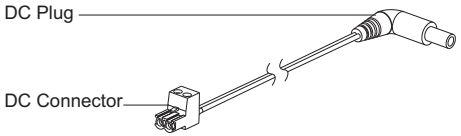




Solar Charge Controller – 3A



USB cable to charge cell phone



Cable to charge In-Diya™ backup unit

TECHNICAL SPECIFICATIONS

PARAMETERS LED Lamp - 2.5 W	SPECIFICATIONS
Power consumption	5 W
Input voltage	10 - 14.5 V DC
Efficiency of LED controller circuit	Greater than 85%
Maximum light output of each lamp	Equivalent to 7 W CFL
Color of light emitted by the LED	White
LED life	50000 hours*
Solar Panel	
Type	Mono-Crystalline
Maximum rated power	10 Wp
Input voltage	17 V DC
Cable to connect solar panel to solar charge controller - 3A	10 m, 18 AWG (0.75 mm^2)
Solar Charge Controller with Cell Phone Charger	
Input voltage	16 - 21 V DC
Maximum rated output current	3 A continuous load 3.9 A for 1 hour
Rated output voltage • Output 1 • Output 2	 12 V DC 12 V DC
Rated output power	36 W
Cell phone charger port	5.5 V, 400 mA
High voltage disconnect	14.3 $\pm$ 0.2 V
Low voltage disconnect	11.6 $\pm$ 0.1 V
Reconnect voltage	12.7 V
Protection and Monitoring	
Battery charging	Green LED on the left is ON
Battery high	Green and Yellow LED on the right is ON
Battery in conservation mode	Yellow LED is ON
Battery low	Red LED is ON

**5.5 hours usage per day*

TECHNICAL SPECIFICATIONS

PARAMETERS	SPECIFICATIONS
Accessories	
Cable to connect LED Lamps to solar charge controller	10 m, 22 AWG (0.34 mm^2)
Bed switch to operate lamps	5 A
Cable to charge In-Diya™ backup unit	1 m, 2 core 20 AWG (0.5 mm^2)
Cable to connect the mobile charging port of the solar charge controller	0.5 m, 2 core 40 AWG (0.005 mm^2)
Glass cartridge fuse	5 A
Screw	M3.5 X 19 mm
Environmental	
Operating temperature	-10 to 55° C
Storage temperature	-10 to 55° C
Relative humidity	90%

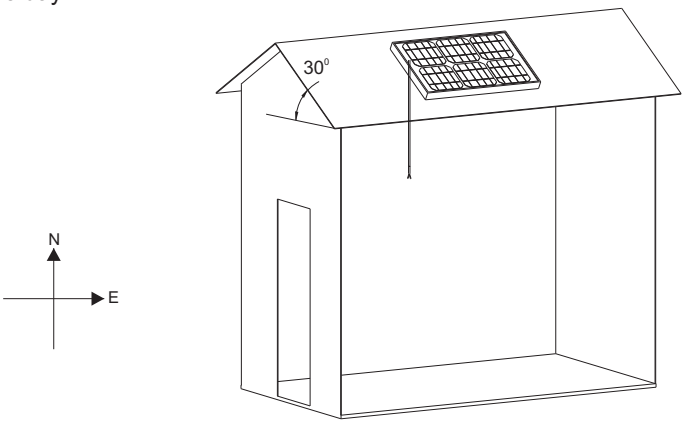
Table 1. Recommended cable specification for solar panel size higher than 12 V, 10 Wp and battery capacity higher than 12 V, 5 Ah

Solar panel rating	Battery rating	Cable size to connect solar panel to solar charge controller - 3A*		Cable size to connect battery to solar charge controller - 3A**		Maximum allowable load at 12 V
		(mm^2)	(AWG)	(mm^2)	(AWG)	(W)
12 V, 20 Wp	12 V, 10 Ah	0.82	16	0.82	16	12
12 V, 30 Wp	12 V, 30 Ah	1.5	14	0.82	16	24
12 V, 40 Wp	12 V, 50 Ah	1.5	14	0.82	16	36

**The length of the cable considered from solar panel to solar charge controller is 10 mts.*
*** The length of the cable considered from battery to solar charge controller is 1.5 mts.*

1. Mount the solar panel on the roof top.

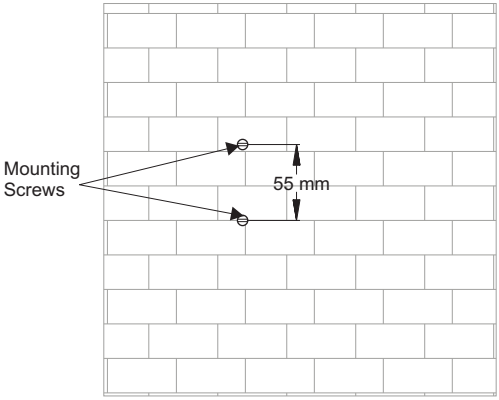
Solar panel should be mounted on the rooftop facing towards south direction. The rooftop area must be free from shadow and must receive maximum sunlight during the day.

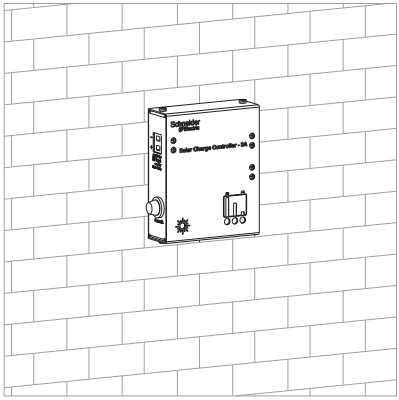


Note: *It is recommended to mount the solar panel facing towards south direction at an angle of 30° for its optimum performance.*

2. Mount the solar charge controller on the wall.

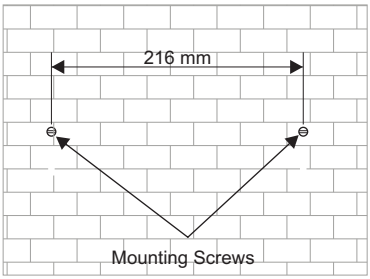
Drill two holes of 3.5 mm diameter with a distance of 55 mm as shown in the figure below. Use the screws provided to fix the solar charge controller on the wall.

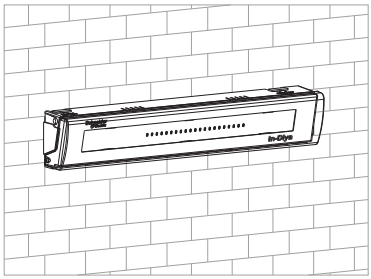




3. Fix the LED Lamps on the wall.

Drill two holes of 3.5 mm diameter with a distance of 216 mm as shown in the figure below. Use the screws provided to fix the LED Lamp on the wall.

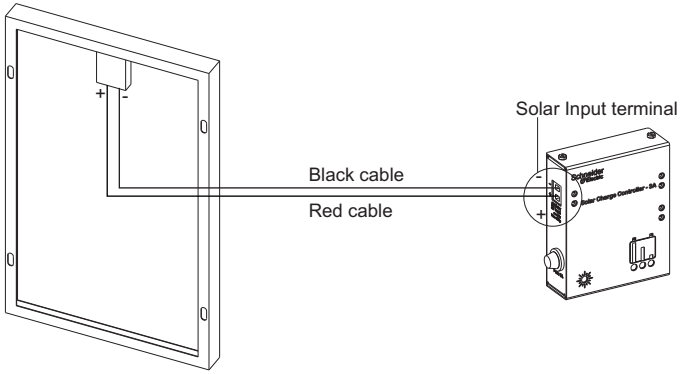




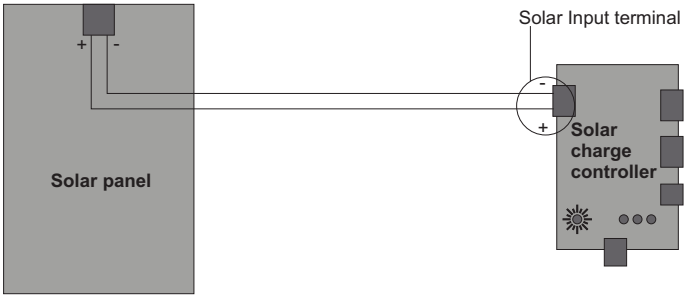
4. Connect the solar panel to the solar charge controller.

Connect the cable from the solar panel to the solar input terminal of the solar charge controller with correct polarity. (Connect Red cable to the '+' terminal and Black cable to the '-' terminal of the solar charge controller).

Connection diagram



Wiring diagram

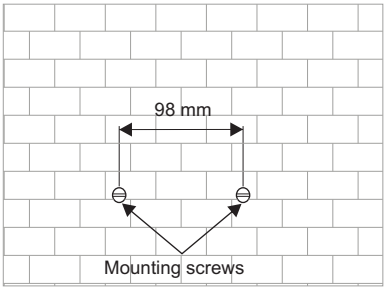


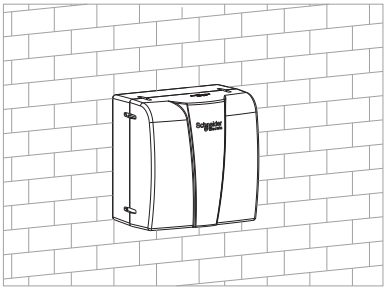
After connecting the solar panel to the solar charge controller, observe that the battery status indicator LEDs (Yellow and Green LED on the right hand side of the solar charge controller) are ON.

5. Connect the battery to the solar charge controller.

5.1 Connection to Schneider Electric supplied In-Diya™ backup unit.

Drill two holes of 3.5 mm diameter with a distance of 98 mm as shown in the figure below. Use the screws provided to fix the backup unit on the wall.

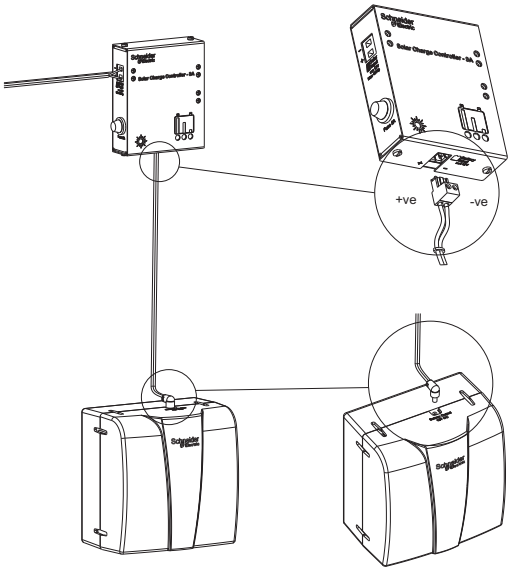




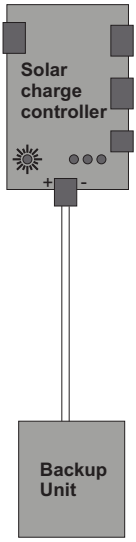
5.2 Connect the In-Diya™ backup unit to the solar charge controller.

Connect the backup unit to the solar charge controller using the cable provided (refer 'Package Contents' - Item # 7) to charge the backup unit as shown in the figure below.

Connection diagram



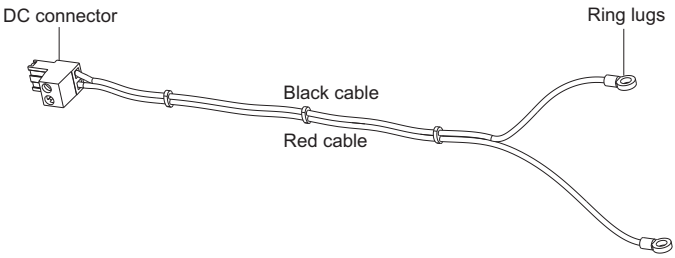
Wiring diagram



Note: *Customer need to purchase In-Diya™ backup unit 12 V, 4.5 Ah (AEH-B06-4.5AH) separately.*

5.3 Connection to any 12 V battery

5.3.1. Make the cable assembly as shown in the figure below.

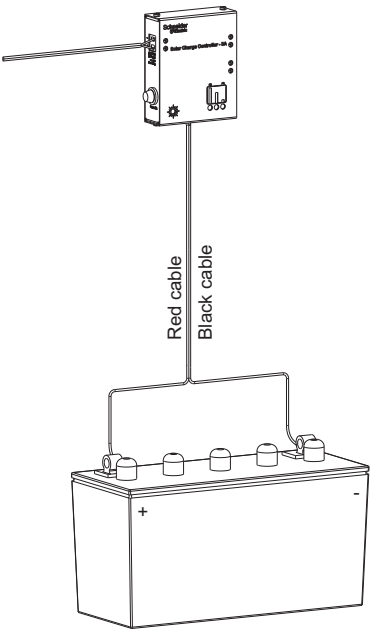


Note 1 : *Customer need to remove the DC connector from the cable to charge the battery.*

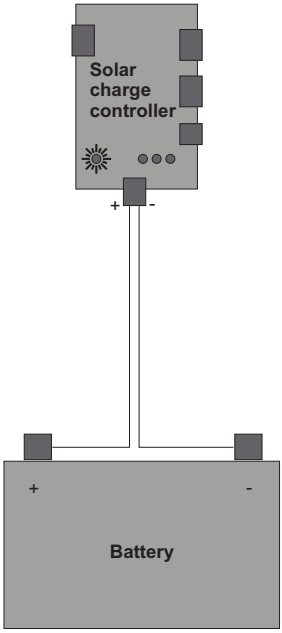
Note 2 : *Customer need to purchase the cable locally as per the specifications recommended in Table 1.*

5.3.2 Connect the battery to the solar charge controller with the cable assembly.
Connect the open end of the Red cable to '+' terminal and Black cable to the '-' terminal of any 12 V battery as shown in the below figure.

Connection diagram



Wiring diagram



After connecting the battery to the solar charge controller observe the charging LED on the solar charge controller (Green LED to the left) is ON. This implies that the solar charge controller is charging the battery. The charging LED will not glow in case of connection made at night or when the sun is set. In case of connection made at night or when the sun is set, the battery status indicator LEDs will glow depending upon the battery state of charge.

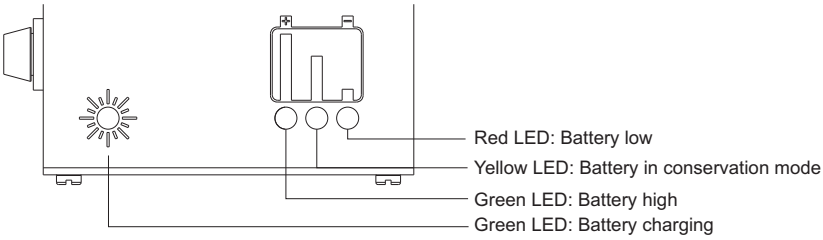


Table 2. Battery Status Indicator LEDs on the solar charge controller

Battery status	Battery Status Indicator LEDs			Battery voltage level
	Green LED	Yellow LED	Red LED	
Battery high	ON	ON	OFF	Above 13.3 V
Battery in conservation mode	OFF	ON	OFF	13.3 V - 12.3 V
Battery low	OFF	OFF	ON	Below 11.7 V

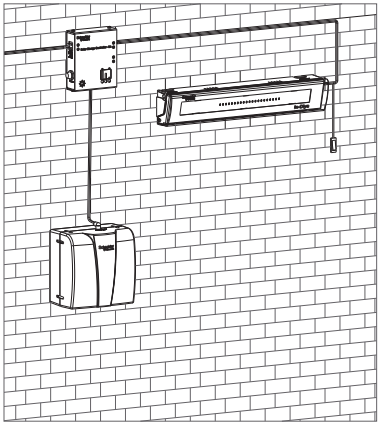
6. Connect the LED Lamps to the solar charge controller.

Use the 2 core (0.34 mm^2) 10 m cable provided (refer 'Package Contents' – Item # 6) to connect LED Lamps to the solar charge controller as shown in the connection diagram.

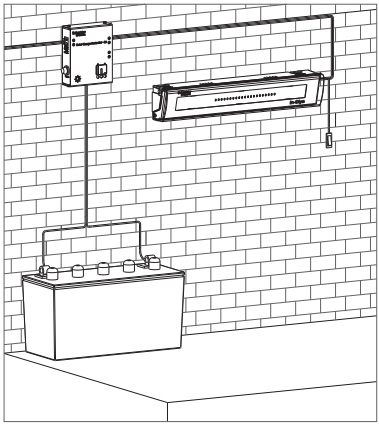
Connect one end of the Red cable to '+' 12 V input terminal of the LED Lamp and the other end to the '+' output 1 terminal of the solar charge controller in series with bed switch.

Connect one end of the Black cable to the '-' input terminal of the LED Lamp and the other end to '-' output 1 terminal of the solar charge controller.

Repeat the step 6 to connect other LED Lamp to the output 2 terminal of the solar charge controller.

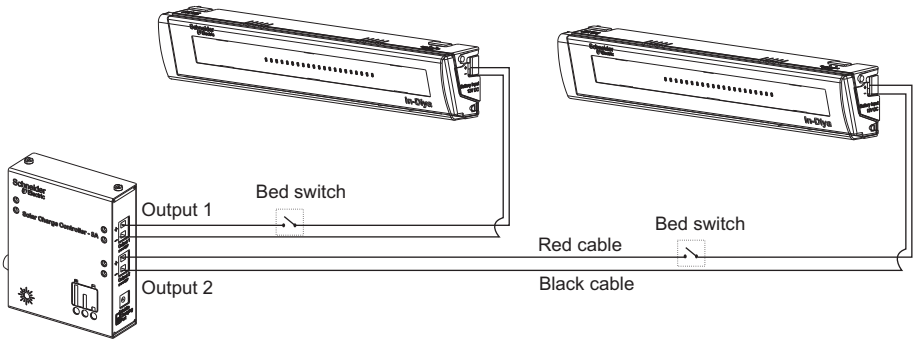


When connected to Schneider Electric supplied backup unit

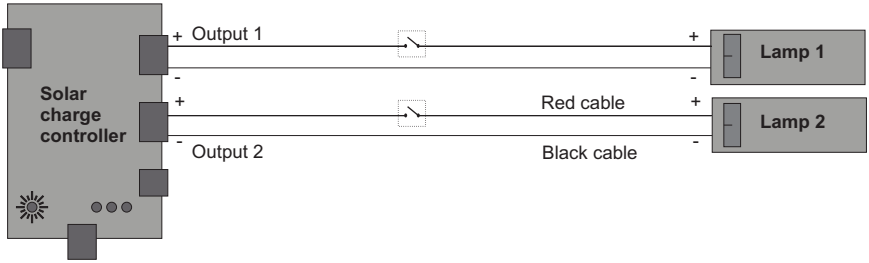


When connected to any 12 V battery

Connection diagram



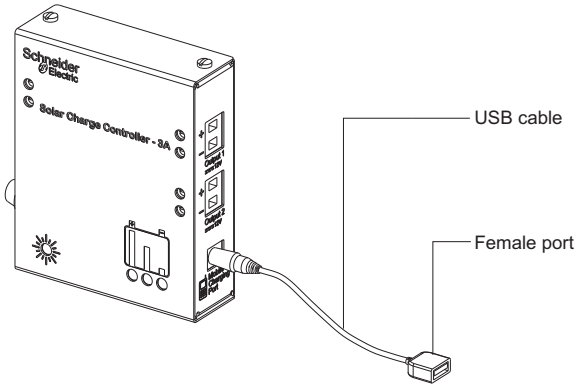
Wiring diagram



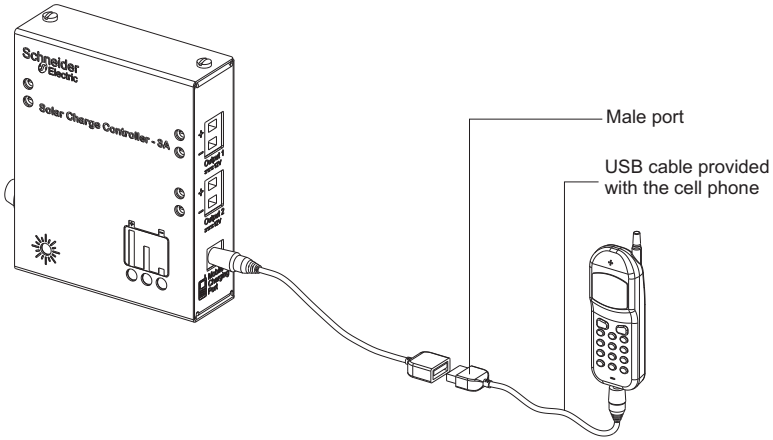
7. Charge the cell phone using the USB cable.

Follow the instructions given below to charge your cell phone.

1. Connect the USB cable provided (refer 'Package Contents' - Item # 3), to mobile charging port of the solar charge controller.



2. Charge your cell phone using the USB cable (male port) provided with your cell phone.

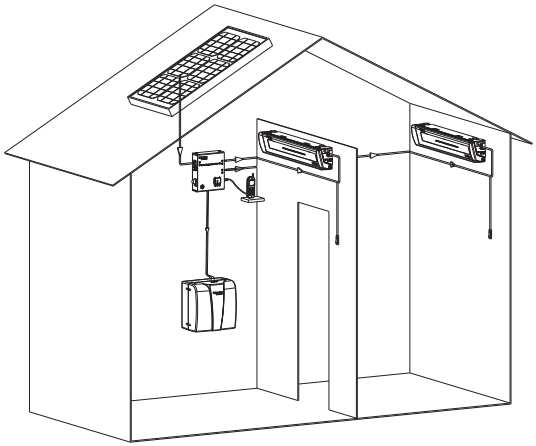


Typical Installation

The below image shows typical installation of Solar Home System with 2 LED Lamps.

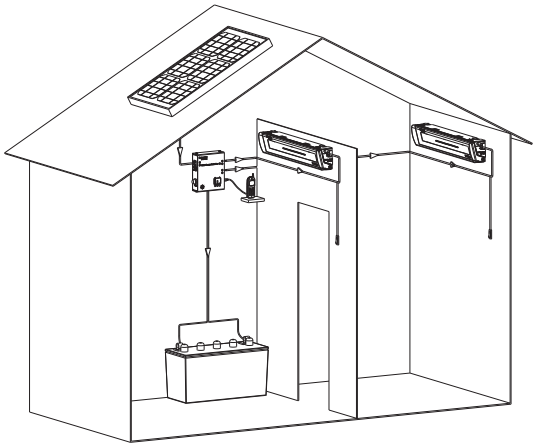
1. Solar Home System - 2 Lamps with Schneider Electric supplied backup unit.

Connection diagram

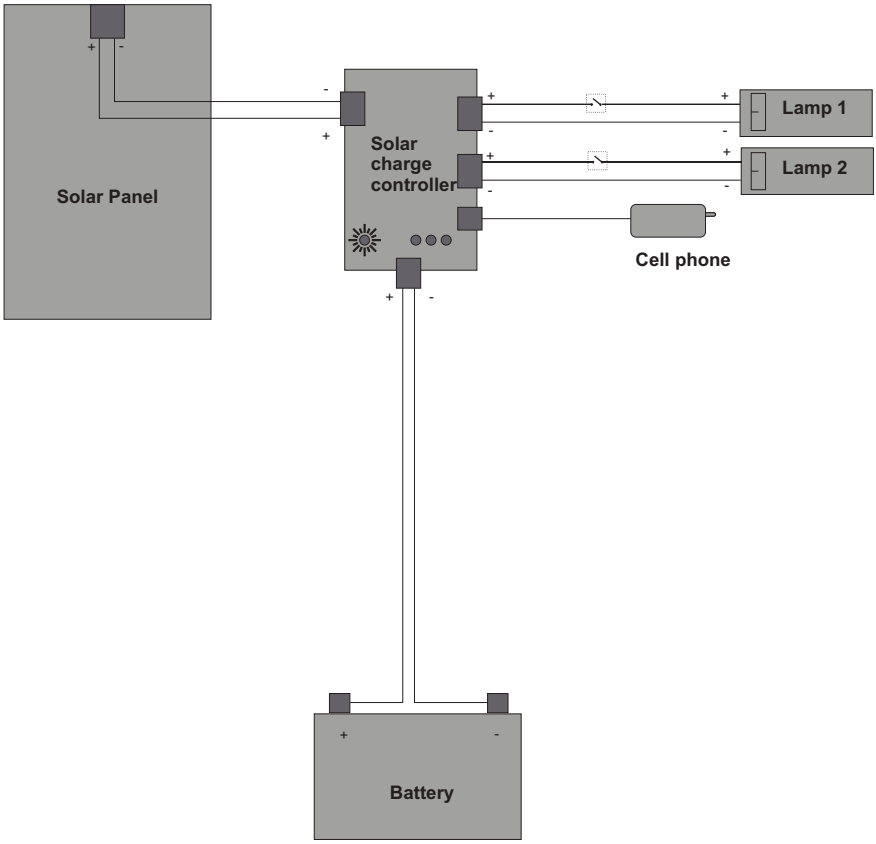


2. Solar Home System - 2 Lamps with any 12 V battery.

Connection diagram



Wiring diagram



HOW TO USE YOUR SOLAR HOME SYSTEM – 2 LAMPS

How to operate the LED Lamps

Switch ON the LED Lamp by pressing the bed switch. The lamp will glow if the battery is charged and the battery status indicator LEDs will be ON depending upon the battery state of charge. (Refer Table 2).

The lamp will not glow if battery has reached the cut-off voltage. The Red LED of the solar charge controller will be ON and indicates that the battery is low. Allow the battery to get charged from solar panel when the sun shines again.

How to charge your cell phone

Plug the USB cable to the mobile charging port of the solar charge controller whenever you want to charge your cell phone.

TROUBLESHOOTING

Problem	Possible Cause	Solution
Lamps are not glowing	Battery has reached the cut-off voltage	Check whether the battery low indication (Red LED) on the solar charge controller is ON. If yes, the battery has reached the cut-off voltage. Allow the battery to get charged from solar panel when sun shines again.
	Cable from solar panel to solar charge controller is connected with reverse polarity	Check whether the Red cable from solar panel is connected to '+' solar input terminal and Black cable to the '-' solar input terminal of the solar charge controller. After connecting, check if the battery status indicator LEDs (Green LED and yellow LED) are ON. If not, the cable is reverse connected. Remove the connection and reconnect it with correct polarity.
	Cable from lamps to the solar charge controller is connected with reverse polarity	Check whether the Red cable from the '+' terminal of the LED lamp is connected to the '+' output terminal of solar charge controller and Black cable from the ' –' terminal of the LED Lamp is connected to the '–' output terminal of the solar charge controller through bed switch. If not, the cable is reverse connected. Remove the connection and reconnect it with correct polarity.
	In case of Schneider Electric supplied Backup unit: DC plug is unplugged from the battery or there is loose connection between DC plug and DC jack	Check whether the cable to charge In-Diya™ backup unit is plugged to the 12 V DC jack. If not, remove the plug and plug it again.
	In case of any 12 V battery: Battery is connected to solar charge controller with reverse polarity or there is loose connection of cable at the battery terminal	Check whether the Red cable from the cable assembly is connected to the '+' terminal and Black cable is connected to the '-' terminal of the battery. If not, reverse the connection. Check if the fuse has blown. In case the fuse has blown, replace the fuse.

TROUBLESHOOTING

Problem	Possible Cause	Solution
Cell Phone is not charging	USB cable is unplugged from the mobile charging port of the solar charge controller	Check whether the USB cable is plugged to the mobile charging port of the solar charge controller. If not, unplug and plug it again.
	Loose connection between the male and female USB ports of the USB cables	Check whether the female USB port of the USB cable is plugged to the male USB port of the USB cable provided with the mobile phone. If not, replace the cables.
	Loose connection between the mobile phone and the USB cable provided with the mobile phone	Check whether the USB cable is plugged to your mobile phone. If not, contact your mobile phone dealer.
If all the above are checked and still the problem exists, please contact your local dealer.		

WARRANTY TERMS AND CONDITIONS

This warranty card entitles the purchaser of AEH-SHS01-10W2L to enjoy the following warranty benefits :

- Solar Panel : 10 years
- LED Lamp : 1 year
- Solar Charge Controller - 3A : 1 year

This warranty is valid only for manufacturing defects and does not cover defects due to external damages such as the following :

- Improper operation, maintenance or modifications.
- Natural calamities such as fire, flood or other acts of God.
- Breakage of plastic components, including the product housing.

This warranty is made void if :

- The warranty void sticker is tampered or removed.
- The warranty card is misplaced.
- The product is opened and serviced by any person not authorized by Schneider Electric.

For parts replaced during servicing, only the remaining warranty period of the original product applies.

WARRANTY CARD

This warranty card is valid only if it is filled in completely, signed and stamped by the dealer on the date of purchase.

WARRANTY CARD	
Model	AEH-SHS01-10W2L
Serial Number	
Name of the Dealer/Supplier	
Address	
Date of Purchase	
Dealer’s Signature and Stamp	

CUSTOMER CARE CENTRE

In case of any queries related to the product, please contact your local dealer.

990-4655

Schneider Electric